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that shall not be restricted to the immediately applicable—one that shall index thoroughly the entire range of the sciences, any portion of which appears at present capable of immediate use in agricultural lines. The development of the agricultural colleges should be broad and healthful and not the reverse.

Finally, there was a proposition, which was referred to the Executive Committee, to endeavor to obtain from Congress for the development of mechanical schools and courses of instruction the same encouragement that has been accorded to agriculture. The proposition is eminently a worthy one, for no class of the people, if one may judge from census returns, needs such encouragement more than this.

RECENT LITERATURE.

The Coccidæ of Ceylon.⁶—The work by Mr. E. E. Green, now to be reviewed, might seem from the title to possess very little general interest. Ceylon is a long way away; and the Coccidæ are apparently considered by most people to be unworthy of serious attention, except with a view to their destruction. Now while the economic side of Coccidology is highly important, it is maintained that the subject possesses also a strong Darwinian interest, and that the perusal of such a work as Mr. Green's will—or should—greatly profit any naturalist who interests himself in general biological problems. We have in these Coccidæ a strictly Homopterous type, but so modified that the family falls outside most of the current definitions—not only of Homoptera, but of Insecta! Combined with a remarkable reduction and even loss of parts, is the development of new characters of the most diverse kind to meet the several needs of the insects. We have here a case in which the most extraordinary modification has taken place, without masking the real affinities of the group; and everything is made so clear by Mr. Green's descriptions and beautiful colored plates, that no intelligent person could fail to understand the exact condition of affairs.

Not only should the work be examined by naturalists, but it should be shown to students of biology in our colleges. It ought to encourage all those who aspire to do original work in biological science. For

⁶ The Coccidæ of Ceylon, by E. Ernest Green, F. E. S., Part 1. With 33 Plates. London, Dulaw & Co., 1896.

very many years, naturalists have collected and observed in Ceylon ; yet here comes Mr. Green, at the end of the nineteenth century, and reveals a whole series of remarkable forms whose existence had remained unknown. Until Mr. Green began to study Coccidæ, the species of this family had never been collected or studied properly in any part of the great Oriental region, and for Ceylon only seven species had been recorded. Mr. Green has found considerably over a hundred, most of them new to science, and he estimates that over two hundred will eventually be found in the island. Of the 30 forms described in the part of the work now before us, 18 were first described by Mr. Green. And there are innumerable other localities in the world, where the Coccidologist may reap a similarly abundant harvest. There is a tradition among Entomologists, that these insects are extraordinarily difficult to study. The difficulty is much more imaginary than real ; the methods of preparation for study are different from those required for other insects, but they are easily learned, and the characters of the species are readily determined with the aid of a hand lens and a compound microscope. The method of procedure is fully explained by Mr. Green in his prefatory remarks. There is one thing, however, to be remembered : No one can intelligently study the Coccidæ of one country or region alone ; since through human means the distribution of many of these creatures has become almost or quite world-wide, and one never knows what may turn up at any place. In the first part of Mr. Green's work, there are recognized in Ceylon various species first described from such diverse regions as Europe, America, Australia and Japan.

In Chap. III, Mr. Green gives a new classification of the subfamilies of Coccidæ. He remarks himself, that it is doubtless imperfect ; but it appears to the writer to be an improvement on all previous ones. It is especially to be recommended for its clearness and consistency, and while it must be admitted that on several points there still exists room for legitimate differences of opinion, the expected changes must chiefly depend on hitherto undiscovered facts. Mr. Green's new subfamilies, *Conchaspinæ* for *Conchaspis*, and *Tachardiinæ* for *Tachardia*, seem entirely justified. The writer regrets the suppression of the *Asterolecaniinæ*, which certainly form a very compact and natural group ; while as to *Porphyrophorinæ*—he has never studied *Porphyrophora*, but *Margarodes* surely belongs to a subfamily distinct from *Monophlelinæ*. It is to be supposed that the *Ortheziinæ*, *Monophlelinæ* and *Margarodinæ* (or *Porphyrophinæ*) are the most primitive of the Coccidæ. The writer inclines to the view that the *Conchaspinæ* are related to the ancestors of the *Diaspinæ*.

Chap. IV, relates to the *Conchaspinae*. On June 9, 1892, being the first anniversary of our wedding day, my wife and I, then living in Jamaica, celebrated the occasion by a trip to Hope Gardens. It was on this occasion that *Conchaspis* was discovered. The next year, Mr. Newstead reported the same genus (as *Pseudinglisia*) and apparently the same species, in an English hot-house. Now Mr. Green describes a very distinct new species (*C. socialis*) from Ceylon, and for the first time makes known the ♂; and I may add that Prof. Townsend has found in Mexico, on *Phemicria* at Vera Cruz, still another species, which I shall publish as *C. newsteadi*.

Chap. V treats of the *Diaspinae*, with a very admirable introduction. The genera found in Ceylon are *Aspidiotus*, *Aonidia*, *Mytilaspis*, *Diaspis*, *Fiorinia* and *Chionaspis*. The absence of *Parlatoria* and *Ischnaspis* is noteworthy. In the writer's opinion, two or three new genera should be added to those listed by Mr. Green. The extraordinary *Aonidia corniger* Green, is unquestionably the type of a new genus, which may be called *Greeniella*, distinguished by the long radiating processes of the scale, and the simple pygidium of the ♀, armed, however, with long irregular terminal processes. *Aonidia bullata* Green, and *Fiorinia secreta* Green, also obviously require new generic names.

Aspidiotus ficus is credited to "(Riley) Comstock," it should properly be credited to Ashmead, who first described it. Riley expressly disclaimed responsibility at the time. For *A. transparens* or *latanie* are described and figured two different varieties of ♂, one reddish, the other pale yellow with a reddish thoracic band. The latter is the typical *transparens*. The species described as *A. cyanophylli* is apparently not Signoret's insect of that name; at all events, specimens sent to me by Mr. Green are distinct. These are on *Cycas* from Kandy, and will be published elsewhere as *A. greenii*. In *Aspidiotus secretus*, Mr. Green describes for the first time the adult ♀. Under *Diaspis amygdali*, it is noted, among other things, that the females (not the scale) on *Callicarpa lanata* are bright pink. *Diaspis fagrace* Green, is a very interesting species, for while the ♀ is like an *Aulacaspis*, the ♂ scale has no trace of carination.

One of the interesting facts developed is that of the gall-producing propensities (if one may so speak) of *Grevia orientalis*. On this plant are found three galls, outwardly almost identical, one due to *Aspidiotus occultus*, one to *Fiorinia secreta*, and the third to a fungus! And what makes the case so extraordinary is, that these are the only true gall-producing *Diaspinae* known!

I believe that what Mr. Green now calls *Mytilaspis gloverii* var. *pallida* is a distinct species, as he at first held. Mr. Alex. Craw has found on variegated *Podocarpus* from Japan a form which I propose to call *M. pallida* var. *maskelli*, because it was discussed by Mr. Maskell in Trans., New Zealand, Inst., XXVII, p. 46. The scale is too broad for *gloverii*, but narrower than *citricola*; it is not far from the color of *citricola*, not very pale as in typical *pallida*, though often whitish at the broader end. There seem to be but four groups of ventral glands, caudolateral four, cephalolaterals six.—T. D. A. COCKERELL.

Section Cutting and Staining.⁷—This is intended primarily for students and practitioners who need a brief introduction to the ways of the microscopist. It briefly describes the necessary apparatus, and the various processes to which tissues are subjected for histological purposes. In many respects it may be said to be fairly up to date, in others, as for instance, in the case of bichromate of silver methods in neurology, it is not. Formol is given as a histological reagent, but unfortunately it is given as *formal*, which is a synonym for *methyhal*, as has been previously pointed out in these pages, and as any one may readily see by consulting German works on organic chemistry or by consulting Gould's "Students' Medical Dictionary"⁸ (1896, Phila.). By reason of priority, and by reason of its expressing the probable relations of the formaldehyde to the water in the so-called 40 per cent. solution, formol is the proper word to use for this liquid. But as the term Formalin has been forced into use in the commercial world and will probably stay in spite of efforts to supplant it, one may as well submit and use the word that one must employ in buying one's reagents. It is obvious, that, if one calls for formal, one will get methyhal.

Cambridge Natural History, Volume V.⁹—The high standard of this series as a reliable, popular scientific work is maintained in this volume. Mr. Sedgwick contributes a paper on Peripatus, giving its habits, manner of breeding, anatomy, development, and a summary of distribution, the latter point being illustrated by a map. Mr. Sinclair treats of Myriapods in the same comprehensive manner, and includes a brief account of fossil forms and their distribution. Mr. Sharp gives an introductory sketch of Insects embodying the latest observa-

⁷ Section Cutting and Staining. W. S. Colman. 12 mo. 160 pp.

⁸ Or any one of several other Medical Dictionaries.

⁹ Cambridge Natural History Series, Vol. V. Peripatus, A. Sedgwick. Myriapods, F. G. Sinclair. Insects, D. Sharp. London and New York, 1895. Macmillan & Co. \$4.00.